

EXHIBIT 3

4 of 6

P1
b. test means having drivers, receivers and boundary scan means for implementing standardized boundary scan integrated test techniques and methods.

P1
c. interconnecting means connecting said registers, and for connecting said registers to said test means, and

P1
d. a controller comprising means for controlling the movement of test data and test signal responses between said receiving and outputting means and said registers, and means for controlling the movement of test data and test signal responses between said registers and said test means.

10
19. The active probe card of claim 1 wherein said test circuitry further comprises means for receiving control signals, clock and serial test data inputs and outputting serial test signal responses.

11
20. The active probe card of claim 1 wherein said active circuit means further comprises:

a. a plurality of registers for receiving said test data and test signal responses.

P1
b. test means having drivers, receivers and boundary scan means for implementing standardized boundary scan integrated test techniques and methods.

P1
c. interconnecting means connecting said registers, and for connecting said registers to said test means, and

P1
d. a controller comprising means for controlling the movement of test data and test signal responses between said receiving and outputting means and said registers, and means for controlling the movement of test data and test signal responses between said registers and said test means.

end

23

REMARKS

Claims 1 and 9 have been amended, claims 6 and 14 deleted, and claims 17-20 have been added. Reexamination and reconsideration of this case are respectfully requested in view of the foregoing amendments to the claims and these remarks.

In Section 1 of the Office Action, Examiner has pointed to the broad language recited in independent claim 1 as not avoiding the prior art referenced. Applicant has specifically modified the claims to more clearly define the "test circuitry," the means for connecting the test circuitry and the location of the test circuitry in the present invention.

In Section 3 of the Office Action, the Office has rejected claims 1, 3 and 8 under 35 U.S.C. 102(b) as being anticipated by Bove et al. (U.S. Patent 4,038,599), Wiscombe (U.S. Patent 5,014,002), Petrich (U. S. Patent 4,517,512), Leedy (U.S. Patent 5,020,219) or Cho (U.S. Patent 4,626,775). It is submitted that such rejection has been overcome by the amendments in this response.

More specifically, the amended Claim 1 recites an active probe card including:

test circuitry mounted on said circuit board having a plurality of test signal ports, said test circuitry including active circuit means for transmitting digital test signals and receiving digital test signal response to and from said integrated circuit;

means, integral to said active probe card, for directly conductively connecting said plurality of test signal ports to an array of connectors of the integrated circuit under test.

None of the cited references discloses or suggests the structure as in Claim 1.

Bove does not disclose or suggest the active circuit means for driving and sampling test data integral to the probe card.

Bove recites an electronic test system including tester (14) which supplies the test patterns to the space transformer (13) for through put to the device under test. See Col. 8, lines 14-30; Col. 8, lines 59-60. The tester is external to and separate from the probe assembly 20 (see FIG. 1). There is no teaching or suggestion to mount active circuit means providing for driving and sampling test data on the probe card, as recited in Claim 1.

Wiscombe is directed to an ATE Jumper Programmable Interface Board for interconnecting automated test equipment and the pins of the integrated circuit device to be tested. See Col. 3, lines 21-25. The automated test equipment (ATE) is not integral to the interface board. Hence, the reference provides no teaching of the invention of Claim 1 wherein a probe card, comprised of a circuit board, has test circuitry for driving and sampling test data mounted on the circuit board.

Petrich is directed to a test system within a test head module. The test head module is external to the probe card as well as the device under test. The reference states that the test head module may be as much as three to five feet away from the device under test. See Col. 5, lines 55-65. While Petrich states that the module could be miniaturized, there is no teaching or suggestion to place the test head module on the probe card itself. See Col. 7, lines 26-30.

Leedy is directed to a flexible tester surface used to test a wafer during fabrication prior to metallization. It is not designed to test an integrated circuit as recited in claim

1. See Col. 2, lines 6-9. The tester surface is not a probe card as recited in Claim 1 nor is it a circuit board.

Cho et al. for a RADIO FREQUENCY PROBING APPARATUS FOR SURFACE ACOUSTIC WAVE DEVICES includes a probe card. The probe card disclosed does have test circuitry 500 mounted thereon, but is merely switching circuitry (output selection circuitry), not the drive circuitry as defined in revised Claim 1. See Col. 8, lines 50-58. The test computer and drive circuitry (test circuitry 103) are not mounted on the probe card. See Col. 2, lines 50-69; Col. 3, lines 1-21; FIGS. 1, 2 and 3.

In Section 4 of the Office Action, Claim 4 was rejected under 35 U.S.C. §102(e) as being anticipated by Cho. Claim 4 depends from Claim 3 which further depends from Claim 1. Claim 1 is directed to an active probe card for testing an integrated circuit. The claimed probe card is comprised of a circuit board and active circuit means mounted on the circuit board for driving test signals and sampling test signal responses . Again, Cho shows drive circuitry 101 and sample test circuitry 103 which is external to and separate from the probe. Since the Cho reference does not teach or suggest a probe card with on board active circuit means and a central aperture into which probe pins extend, Claim 4 is patentable over Cho.

In Section 5 of the Office Action, Claim 6 was rejected under 35 U.S.C. §102(e) as being anticipated by Cho or Petrich. Claim 6 depends from Claim 1. Claim 6 has been deleted rendering this rejection moot.

In Section 6 of the Office Action, Claim 7 was rejected under 35 U.S.C. §102(e) and (b) as being anticipated by Petrich

or Bove. Claim 7 depends from Claim 1. Claim 1 is directed to an active probe card for testing an integrated circuit comprising a circuit board and active circuit means mounted on the circuit board for driving test signals and sampling test signal responses . Again, Petrich shows a test system within a test head module with drive and receive circuits external to the probe card as well as the device under test. Bove recites an electronic test system including tester (14) which supplies the test patterns to the space transformer (13) for through put to the device under test. See Col. 8, lines 14-30; Col. 8, lines 59-60. The tester is external to and separate from the probe assembly 20 (see FIG. 1). Since both the Petrich and Bove references do not teach or suggest a probe card with on board drive and sample test circuitry and bi directional user oriented cells, Claim 7 is patentable over Petrich and Bove.

In Section 8 of the Office Action, Claim 2 was rejected under 35 U.S.C. §103 as being obvious in light of Bove, Petrich, Leedy, or Sokolich (U.S. Patent 4,465,972). Sokolich discloses a printed circuit board testing apparatus. The test apparatus comprises an insulating plate 10 for connecting the printed circuit board under test to a plurality of circuit boards mounted perpendicular to the insulating plate. Mounted on the perpendicular circuit boards are integrated circuits which are used to allow continuity testing of sets of pins of the printed circuit board. See Figures 3 and 4. However, Sokolich does not teach a probe card wherein the active circuit means for driving and receiving test data are integral to the probe card. Specifically Sokolich teaches a device under test connected to an external active source that will test continuity between said selected pins via

external test means. See Column 5, lines 40-49. Sokolich only teaches interface selection means, not the active circuit means of Claim 1.

The Applicant respectfully reminds the Examiner that obviousness cannot be established "absent some teaching or suggestion supporting the combination". ACS Hospital Systems, Inc. v. Montefiore Hospital, 221 USPQ 929, 933 (Fed. Cir. 1984). As previously discussed, since none of these references (Bove, Petrich, Leedy, or Sokolich) teach or suggest a probe card having active circuit means for transmitting and receiving digital test signals mounted thereon, Claim 1 is nonobvious and, therefore, Claim 2's recitation of test circuitry conforming with IEEE standard 1149.1 is nonobvious as well.

Claim 5 was rejected under 35 U.S.C. §103 as being obvious in light of Bove, or Leedy and further in view of Sokolich. Applicant's invention is not met by the proposed combination, and therefore, Applicant respectfully traverses this rejection as well.

Claim 5 depends from Claim 1 and recites that the test circuitry "implements standardized boundary scan integrated circuit test techniques and methodology". Like Claim 2, since none of the references suggest a probe card having on-board active circuit means for driving and sampling digital test data, the specific test circuitry cited in Claim 5 would also be non-obvious. Examiner has cited that it would be obvious to one ordinarily-skilled in the art to modify the apparatus of Bove or Leedy as taught by Sokolich to provide shift registers for the test circuitry in order to efficiently test a multitude of IC circuits quickly. Applicant respectfully points out that

this is not the function of the present invention, but rather to provide active circuitry at the probe card for driving and sampling digital test data. Therefore it is respectfully submitted the Examiners rejection under 35 U.S.C. §103 has been overcome.

Claims 9, 11 and 14-16 were rejected under 35 U.S.C. §102(e) as being anticipated by Petrich. Claim 14 has been deleted rendering this rejection to claim 14 moot. Claims 11, 15 and 16 depend from Claim 9. Claim 9, which is similar to Claim 1, is directed to an active probe card for testing an integrated circuit. The claimed probe card is comprised of a circuit board and active circuit means for driving and sampling digital test data mounted on the circuit board. Claim 9 further recites that the active circuit means includes test signal selection means. Hence, the selection means are also on board the probe. Again, Petrich shows a test system 20 which is external to and separate from the probe 34. While Petrich teaches a device with a stack bus 102, the stack bus is part of the test head and is external to the probe card. See FIG. 1; Col. 7, lines 1-4; lines 15-30. Since the Petrich reference does not teach or suggest a probe card with on board active circuit means and an on board signal selection device, Claim 9, and Claims 11, 15 and 16 which depend therefrom, are patentable over Petrich.

Claim 9, and Claims 11 and 16 which depend therefrom, were also rejected under 35 U.S.C. §103 as being unpatentable over Bove, Leedy, Cho or Wiscombe and further in view of Petrich or Takagi. Takagi (U.S. Patent 5,055,780) teaches a wafer by wafer semiconductor IC tester comprising a test head, a probe card and selection circuits. Again this reference does not

teach active circuit means for driving and sampling test data on the probe card. The test head supplies the wave forms to the device under test via the pogo pins, and is not integral to the probe card. See Column 5, line 62-68. Again, Applicant's invention is not met by the proposed combination. None of the references alone, or in combination suggest including active circuit means, signal selection means, and conductive connection means on-board a probe card, as recited in Claim 9. Therefore, Claim 9 and Claims 11 and 16, which depend therefrom, are believed to be patentable over these references.

Claim 10 is also rejected under 35 U.S.C. §103 as being unpatentable over the combination of Bove or Leedy, in view Petrich or Takagi. Again, since none of these references teach or suggest an on-board active circuit means, specific on-board test circuitry which conforms to IEEE standard 1149.1 would also be nonobvious.

Claim 12 was rejected under 35 U.S.C. §103 as being obvious in light of Cho and further in view of Petrich or Takagi; Claim 13 was rejected under 35 U.S.C. §103 as being obvious in light of Bove, Leedy or Wiscombe in view of Petrich or Takagi and further in view of Sokolich; Claim 14 was rejected under 35 U.S.C. §103 as being unpatentable in view of the combination of Cho in view of Takagi or Petrich; and Claim 15 was rejected under 35 U.S.C. §103 as being obvious in light of Bove in view of Petrich or Takagi. Claim 14 has been deleted rendering this rejection moot. As to the remainder, again, each of these claims depends from Claim 9. Since none of the references cited suggest a probe card having active circuit means mounted thereon, Claim 9, and Claims 12, 13 and

15 which depend therefrom, are nonobvious and therefore patentable over these references.


Furthermore, with respect to Claim 12, neither Takagi or Petrich suggests including selection means on-board the probe card and, therefore, the invention of Claim 12 is non-obvious in light of these references.

Similarly, since the idea of on-board active circuit means as recited in Claim 9 is nonobvious, Claim 13's specific recitation that the on-board active circuit means is implemented using standardized boundary scan integrated circuit test techniques and methodology, is nonobvious as well.

In conclusion, since none of the references cited by the Examiner either alone, or in combination, teach or suggest a probe card which includes active circuit means mounted on the probe card itself, Claims 1 and 9, and the claims which depend therefrom, are believed patentable over these references. In light of the foregoing, early allowance of this application is respectfully requested. The Examiner is encouraged to contact the undersigned to discuss this amendment further.

Respectfully submitted,

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ALBRITTON & HERBERT

By 

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S.N. 07/956,453
A-54681-1/JAS


**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

 Address : COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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07/955,453 10/02/92 D'SOUZA

D A-54601-1/JA

EXAMINER

KARLSEN, E

E6M1/0723

 FLEHR, HOHBACH, TEST ALBRITTON & HERBERT
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SAN FRANCISCO, CA 94111

ART UNIT

PAPER NUMBER

2607

16

DATE MAILED:

07/23/93

 This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☒ Responsive to communication filed on 4-26-93 ☐ This action is made final.

 A shortened statutory period for response to this action is set to expire 30 month(s), 30 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> |

Part II SUMMARY OF ACTION

 1. ☒ Claims 1-5, 7-13, 15-20 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

 2. ☒ Claims 6, 14 have been cancelled.

 3. ☐ Claims _____ are allowed.

 4. ☐ Claims _____ are rejected.

 5. ☐ Claims _____ are objected to.

 6. ☒ Claims 1-5, 7-13, 15-20 are subject to restriction or election requirement.

 7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

 8. ☐ Formal drawings are required in response to this Office action.

 9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).

 10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).

 11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).

 12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☐ been filed in parent application, serial no. _____; filed on _____

 13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

 14. ☐ Other

EXAMINER'S ACTION

Serial No. 956,453

-2-

Art Unit 2607

1. The Rejection of November 24, 1992 and the Examiner's Interview Summery Record of April 26, 1993 were labeled Paper Nos. 3 and 4 respectively. They should have been numbered 12 and 13 respectively and have been so renumbered.
2. The Examiner is unable to understand the disclosure. Figures 1A and 1B go together and are a first embodiment. Figures 2 and 9 appear to be second and third embodiment respectively. Figures 3, 4, 5, 7, 8, 10, 11 and the analog circuitry of page 14, lines 15-21 of the specification somehow couple to the apparatus of one of or all of the devices of Figures 1A, 1B, 2 and 9 but it is not clear which go where or how.
3. The following requirement to elect is made as a best effort since it is not clear what the structure of the disclosed apparatus is.
4. This application contains claims directed to the following patentably distinct species of the claimed invention:
 1. The species of Figures 1A and 1B.
 2. The species of Figure 2.
 3. The species of Figure 9.

Applicant is required under 35 U.S.C. § 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claim appears to be generic.

Serial No. 956,453

-3-

Art Unit 2607

Applicant is advised that a response to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 C.F.R. § 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. M.P.E.P. § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. § 103 of the other invention.

5. With the election of one of the above species further election of sub-species is required as follows: (Read "species" as "subspecies".) (Proper disclosure must be present for that which is elected).

6. This application contains claims directed to the following patentably distinct species of the claimed invention:

- 1A. The subspecies of Figure 3.
- 2A. The subspecies of Figure 4.
- 3A. The subspecies of Figure 5.
- 4A. The subspecies of Figure 7.
- 5A. The subspecies of Figure 8.
- 6A. The subspecies of Figure 10.
- 7A. The subspecies of Figure 11.

Serial No. 956,453

-4-

Art Unit 2607

8A. The subspecies of that described at page 14, lines 15-21 of the specification.

Applicant is required under 35 U.S.C. § 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claim appears to be generic.

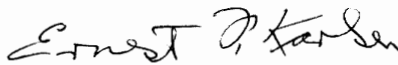
Applicant is advised that a response to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 C.F.R. § 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. M.P.E.P. § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. § 103 of the other invention.

7. A telephone call was made to the Office of the Attorney of Record on July 16, 1993 to request an oral election to the above restriction requirement, but did not result in an election being made.

E. Karlsen:klw
July 22, 1993
(703) 305-4768


ERNEST F. KARLSEN
PRIMARY EXAMINER
GROUP 237



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/956,453	10/02/92	D'SOUZA	A-54681-1/JA

E6M1/0923
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EXAMINER	
ART UNIT	PAPER NUMBER
	17

2607

DATE MAILED:

EXAMINER INTERVIEW SUMMARY RECORD 9/23/93

All participants (applicant, applicant's representative, PTO personnel):

- (1) Mr. James A. Sheridan (3) _____
(2) Mr. Mark Kirkland (4) _____

Date of interview 9-20-93 + 9-21-93

Type: ☒ Telephonic ☐ Personal (copy is given to ☐ applicant ☐ applicant's representative).

Exhibit shown or demonstration conducted: ☐ Yes ☒ No. If yes, brief description: _____

Agreement ☐ was reached with respect to some or all of the claims in question. ☒ was not reached.

Claims discussed: 1, 9, 18

Identification of prior art discussed: That of record.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: Operation of the invention was discussed at length. The claims were discussed. The restriction was discussed and is to be reported to in the form where Figs. 9-11 are a first species, Figs. 1A, 1B and 3-8 are a second species and Figures 2-8 are a third species or where the above second and third species are a single species. No agreement to allow claims was reached.
(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

Unless the paragraphs below have been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW (e.g., items 1-7 on the reverse side of this form). If a response to the last Office action has already been filed, then applicant is given one month from this interview date to provide a statement of the substance of the interview.

☒ It is not necessary for applicant to provide a separate record of the substance of the interview.

☐ Since the examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action.

Ernest J. Karlsen
Examiner's Signature



360 - 116 GP 2607
 IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED

Applicant(s): 360-116 GP 2607 File No. A-54681-1/JAS Serial
 No.: 07/956,453 Group Art Unit: 2607
 Filed: October 2, 1992 Date: September 24, 1993
 For: ACTIVE PROBE CARD

PETITION FOR EXTENSION OF TIME

I hereby certify that this correspondence is being sent by FIRST CLASS MAIL, postage prepaid in an envelope addressed to Commissioner of Patents, Washington, D.C. 20231

Commissioner of Patents
 Washington, DC 20231

on September 24, 1993

Sir:

Pursuant to 37 C.F.R. 1.136(a), an extension of time of:

	Large Entity	Small Entity
One Month	// \$ 110.00	// \$ 55.00
Two Months	/x/ \$ 360.00	// \$ 180.00
Three Months	// \$ 840.00	// \$ 420.00
Four Months	// \$1,320.00	// \$ 660.00

is hereby requested to XX/ respond to the Official Action mailed JULY 23, 1993

// file a Notice of Appeal in response to a final rejection mailed _____;

// file an Appeal Brief now due _____;

/X/ other (specify): _____

The requisite fee pursuant to 37 C.F.R. 1.17 is:

/X / enclosed by Check No. \$360.00; // to be charged to Deposit Account No. 06-1300 (Order No. A- /JAS). Two copies of this sheet are enclosed.

/X/ Please charge any additional fees or credit any overpayment to Deposit Account No. 06-1300 (Order No. A-54681-1/JAS). Two copies of this sheet are enclosed.

Respectfully submitted,

FLEHR, HOHBACH, TEST,
 ALBRITTON & HERBERT

By: Gary S. Williams

Gary S. Williams
 Reg. No. 31,066

Suite 3400
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 San Francisco, CA 94111-4187
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Form 1.30
 10/92

ONE MONTH EXTENSION GRANTED
 By Direction
 Primary Examiner
Raven L. L... 10/19/93
 Clerk, Group 260 Date

070 TW 10/13/93 07956453

1 116

360.00 CK



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of)
 DANIEL B. D'SOUZA) Examiner: E. Karlsen
 Serial No. 07/956,453) Art Unit: 2607
 Filed: October 2, 1992)
 For: ACTIVE PROBE CARD) San Francisco, CA 94111
 September 24, 1993

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, DC 20231 on September 24, 1993.

Signed: _____

Denise R. Caldwell

ELECTION OF SPECIES UNDER 37 CFR 1.146

Commissioner of Patents
 and Trademarks
 Washington, D. C. 20231

Sir:

In response to the Restriction Requirement of July 23, 1993, applicants wish to elect the species of Figure 9, and the subspecies of Figure 10 and 11 with traverse. Applicants traverse the subspecies election requirement noting that Figures 10 and 11 are details of the species of Figure 9 and do not represent patentably distinct inventions. Similarly, applicants respectfully submit that Figures 3-5 and 7-8 also are not patentably distinct, as each depicts a varying level of detail of the same patentable invention of the species of Figure 9.

Applicants respectfully request that Claims 17-20 be amended as follows:

17. (Amended) On line one, change "1" to --9--.
18. (Amended) On line one, change "1" to --9--.
19. (Amended) On line one, change "1" to --9--.
20. (Amended) On line one, change "1" to --9--.

Claims 9-20 (as amended) read on the elected species and subspecies.

Applicants additionally request that Figure 7, and the text in the specification relating to Figure 7, be canceled. Specifically, the text in the specification at page 6, lines 7-8, and page 11, lines 11-17, should be canceled.

Applicants submit revised Figures 3 and 4 for the examiners review. Applicants respectfully submit that no new matter has been introduced and as such the examiner should allow for the revised figures to be entered. Applicants have specifically detailed the changes below, highlighting the particular portions of the specification that support the proposed changes.

Referring to Figure 3, applicants have requested that a dotted line and associated reference designator 203 be added surrounding the entire JTAG circuitry 300, and a dotted line coupled with its associated reference designator 204 be added around the test data registers 312. Applicants point first to Figure 2 and the associated text in the specification at page 8, line 13 describing Figure 2 as depicting "the basic test circuitry arrangement mounted upon an active probe card 200 as called for in the IEEE standard 1149.1." As cited at page 3, line 3-13, IEEE 1149.1 defines the Standard Test Access Port and Boundary-Scan Architecture, also known as the JTAG standard. The JTAG standard utilizes control circuitry (not shown in this figure) and a number of registers formed into cells 204 housed in a typical integrated circuit (IC) 203 (Pg. 8, ln. 17-20).

Figure 3 is described as depicting the JTAG based test circuitry 300 housed in a single integrated circuit (Pg. 9, ln. 10). Applicants provided Figure 3 to further detail the basic test circuitry housed in a single integrated circuit. The reference numbering was originally selected with one reference number provided to refer to the IC's (203) housing the test circuitry, and a separate reference designator was assigned to

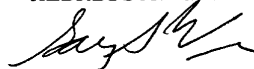
designate the actual test circuitry (300). Unfortunately, as pointed out by the Examiner, applicants attempt at clarity has only confused the issue. In addition to the functional language relationship that clearly exists in the specification, specific reference relating the figures exist, as found at page 9, line 22-24, wherein the test data registers 312 of Figure 3 are described as making up the boundary-scan cells 204 of Figure 2. As such, applicants respectfully submit that there exists sufficient support in the specification to justify the additions, since clearly the ICs 203 house the basic test circuitry 300.

Referring to Figure 4, applicants have requested that a dashed line and accompanying reference designator 203 be added. Applicants had intended to provide a series of more detailed figures, Figure 4 being a more detailed depiction of the functional circuit of Figure 3 (Pg. 10, ln. 7-9). As such many of the same designators from Figure 3 are found on Figure 4 including the test circuitry 300 (now proposed to be 203 to be consistent with figure 3), the tap controller 302, the bypass register 316, instruction register 310 and muxes 318 and 322.

As such the clearly established relationship between Figure 3 and Figure 4 should provide adequate support to justify adding the enclosing box 203 representative of the IC housing.

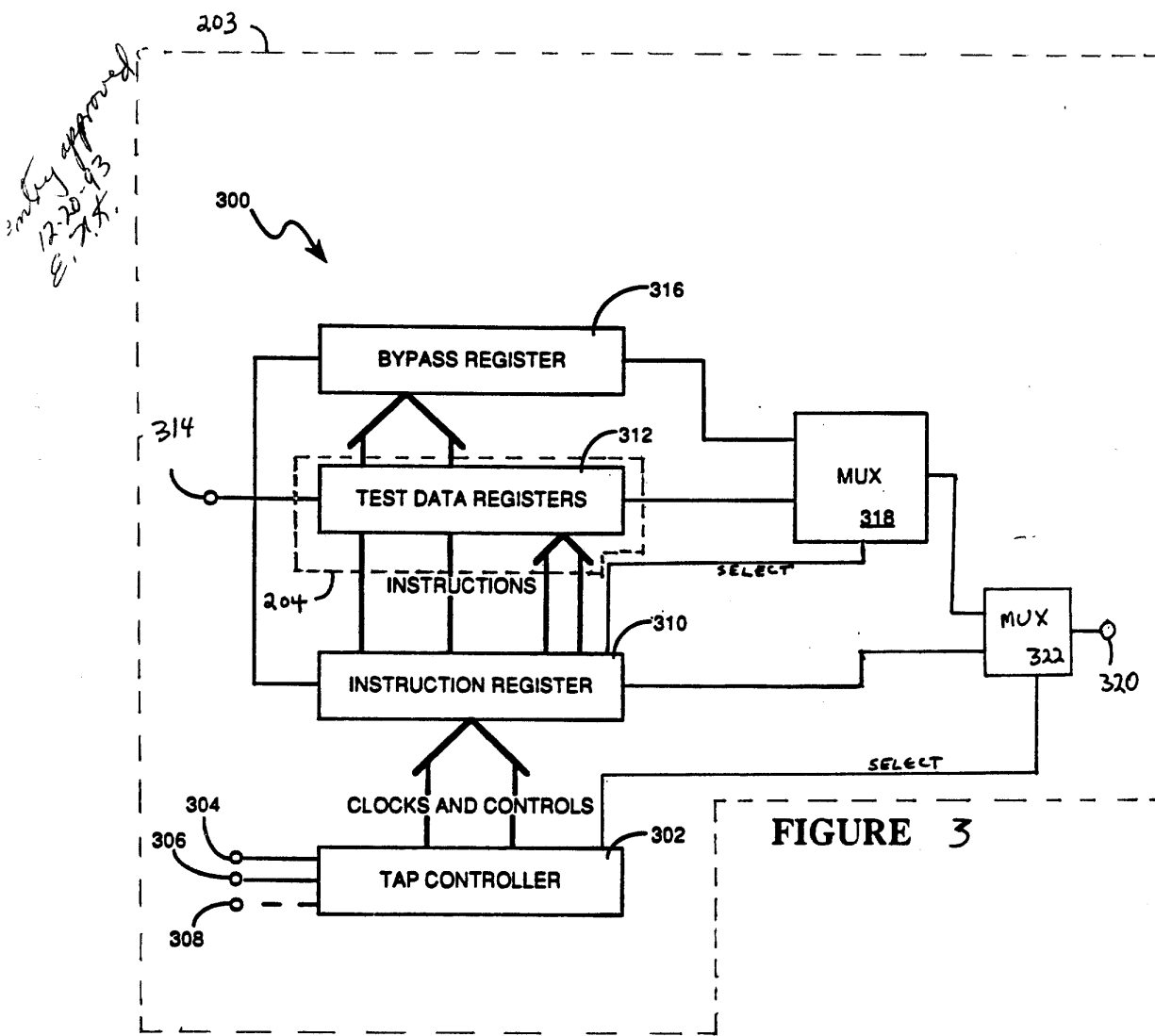
The Examiner is invited to call the undersigned attorney if a telephone call could help resolve any remaining items.

Respectfully submitted,
FLEHR, HOHBACH, TEST,
ALBRITTON & HERBERT



Gary S. Williams
Reg. No. 31,066
Tel. (415) 494-8700

FLEHR, HOHBACH, TEST, ALBRITTON & HERBERT
Four Embarcadero Center, Suite 3400
San Francisco, CA 94111



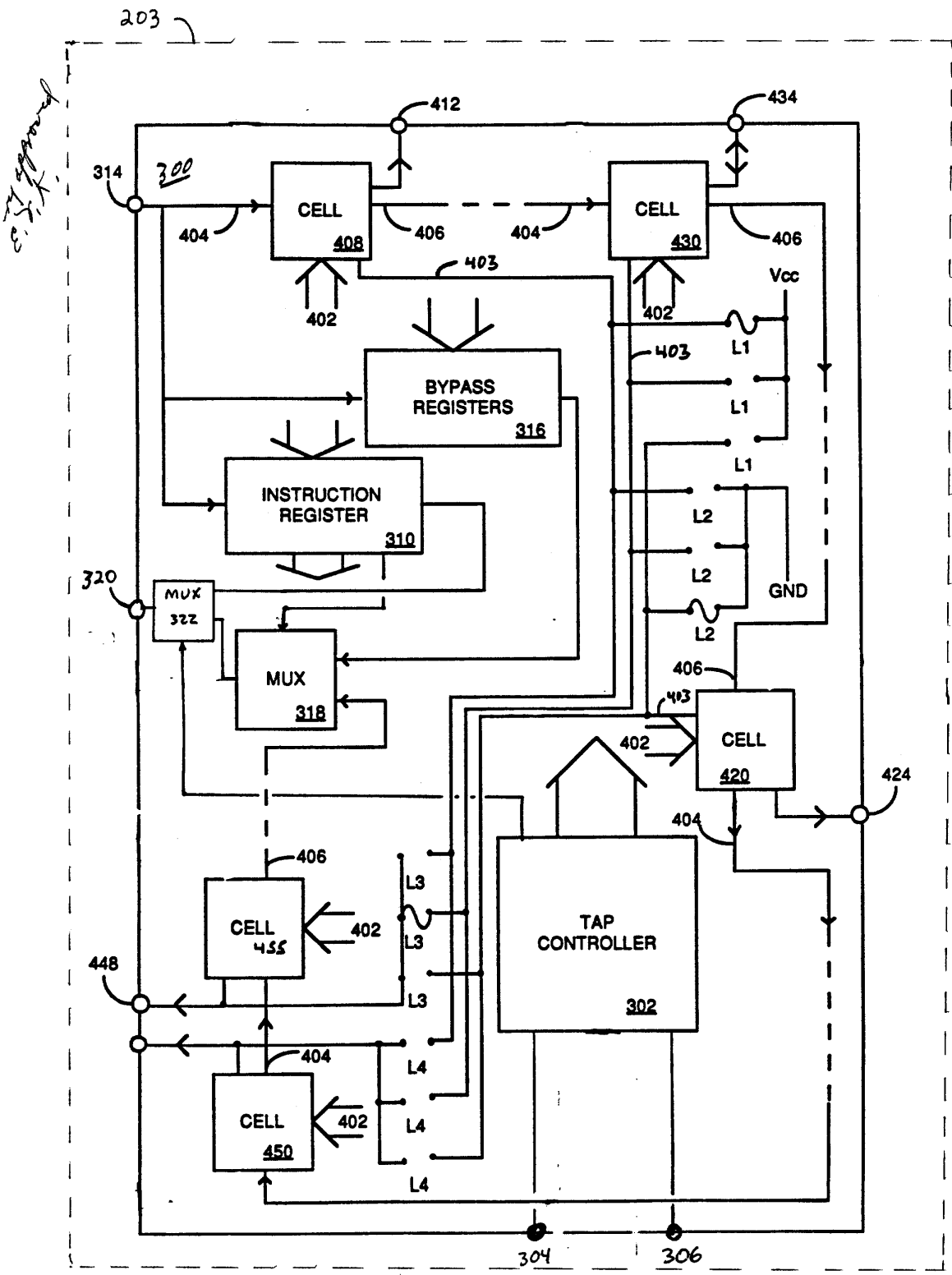


FIGURE 4



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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7/25/93 10/21/93 PRODUCT

EXAMINER

KARLSEN, E

EE01/1208

FLEHR, HERBACH, TEST ALLOCATION & RECOVERY
SUITE 3400
4 EMBARCADEO CENTER
SAN FRANCISCO, CA 94111

ART UNIT	PAPER NUMBER
----------	--------------

2407

11/E

DATE MAILED: 10/21/93

NOTICE OF ALLOWABILITY

PART I.

1. ☒ This communication is responsive to the communication of September 27, 1993
2. ☒ All the claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
3. ☒ The allowed claims are 9-13 and 15-20
4. ☐ The drawings filed on _____ are acceptable.
5. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received. ☐ not been received. ☐ been filed in parent application Serial No. _____ filed on _____
6. ☒ Note the attached Examiner's Amendment.
7. ☐ Note the attached Examiner Interview Summary Record, PTOL-413.
8. ☐ Note the attached Examiner's Statement of Reasons for Allowance.
9. ☐ Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10. ☐ Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

PART II.

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2. ☒ APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
 - a. ☒ Drawing informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948, attached hereto or to Paper No. 4. CORRECTION IS REQUIRED.
 - b. ☒ The proposed drawing correction filed on Sept. 27, 1993 has been approved by the examiner. CORRECTION IS REQUIRED.
 - c. ☐ Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
 - d. ☒ Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

Attachments:

- ☒ Examiner's Amendment
- ☐ Examiner Interview Summary Record, PTOL-413
- ☐ Reasons for Allowance
- ☐ Notice of References Cited, PTO-892
- ☐ Information Disclosure Citation, PTO-1449

- ☐ Notice of Informal Application, PTO-152
- ☐ Notice re Patent Drawings, PTO-948
- ☐ Listing of Bonded Draftsmen
- ☐ Other

Ernest A. Karlsen

Serial Number: 07/956453

-2-

Art Unit: 2607

The Examiner acquiesces to Applicant's traverse of the restriction requirement regarding Figures 9 ,10 and 11. There are no other reasons for the traverse presented.

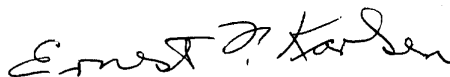
Applicant's election of claims 9-13 and 15-20 in Paper No. 10 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (M.P.E.P. § 818.03(a)).

An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee.

This application is in condition for allowance except for the presence of claims 1-5, 7 and 8 to inventions and/or species nonelected without traverse. Accordingly, claims 1-5, 7 and 8 have been cancelled.

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest F. Karlson whose telephone number is (703) 305-4768.

Ernest F. Karlson
December 20, 1993



ERNEST F. KARLSON
PRIMARY EXAMINER


**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: Box ISSUE FEE
COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

EQ01/1228
FLEHR, MOHBACH, TEST ALBRITTON & HERBERT
SUITE 3400
4 EMBARCADERO CENTER
SAN FRANCISCO, CA 94111

**NOTICE OF ALLOWANCE
AND ISSUE FEE DUE**

☐ Note attached communication from the Examiner

☐ This notice is issued in view of applicant's communication filed _____

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/956,453	10/02/92	011	KARLSEN, E	2607 12/28/93
First Named Applicant	D'SOUZA, DANIEL B.			

TITLE OF INVENTION
ACTIVE PROBE CARD

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 A-54661-1/JA	324-158.00P	T77	UTILITY	NO	\$1170.00	03/28/94

THE FEE DUE IS THE AMOUNT IN EFFECT AT THIS TIME. IF THE AMOUNT OF THE ISSUE FEE INCREASES PRIOR TO PAYMENT, APPLICANT WILL BE NOTIFIED OF THE BALANCE OF ISSUE FEE DUE.

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT.

PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

- I. Review the SMALL ENTITY Status shown above.
If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the patent and Trademark Office of the change in status, or
B. If the Status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
B. File verified statement of Small Entity Status before, or with, pay of 1/2 the FEE DUE shown above.

- II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, Part C of this notice should also be completed and returned.
- III. All communications regarding this application must give series code (or filing date) and serial number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to contrary.

IMPORTANT REMINDER: Patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B—ISSUE FEE TRANSMITTAL

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 2 through 6 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advances orders and notification of maintenance fees will be mailed to addressee entered in Block 1 unless you direct otherwise, by: (a) specifying a new correspondence address in Block below; or (b) providing the PTO with a separate "FEE ADDRESS" for maintenance fee notifications with the payment of Issue Fee or thereafter. See reverse for Certificate of Mailing.

1. CORRESPONDENCE ADDRESS

MAIL ROOM
74 APR 4 1994

FLEHR, HOHBACH, TEST, ALBRITTON & HERBERT
SUITE 3400
4 EMBARCADERO CENTER
SAN FRANCISCO, CA 94111

2. INVENTOR(S) ADDRESS CHANGE (Complete only if there is a change)

INVENTOR'S NAME

City, State and ZIP Code

City, State and ZIP Code

Check if additional changes are on reverse side

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/956.453	10/02/92	011	KARLSEN, E	2607 12/28/93

First Named Applicant: DANIEL B. SOUTHA

TITLE OF INVENTION: ACTIVE PROBE CARD

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
A-54681-1/JA	324-158.00P	T77	UTILITY	NO	\$1170.00	03/28/94

3. Correspondence address change (Complete only if there is a change)

James A. Sheridan
FLEHR, HOHBACH, TEST, ALBRITTON & HERBERT
Four Embarcadero Center, Suite 3400
San Francisco, CA 94111 /

4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.

1. FLEHR, HOHBACH,
2. TEST, ALBRITTON &
3. HERBERT

DO NOT USE THIS SPACE

100 MG 04/11/94 07956453

5. ASSIGNMENT DATA TO BE PRINTED ON THE PATENT (Minimum of 10)

(1) NAME OF ASSIGNEE: Hachi America, Ltd.

(2) ADDRESS: (CITY & STATE OR COUNTY) Brisbane, California

(3) STATE OF INCORPORATION, IF ASSIGNEE IS A CORPORATION: California

A. ☐ This application is NOT assigned.
☐ Assignment is being previously submitted to the Patent and Trademark Office.
☐ Assignment is being submitted under separate cover. Assignments should be directed to Box ASSIGNMENTS.

PLEASE NOTE: Unless an assignee is identified in Block 5, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

6a. The following fees are enclosed:
☐ Issue Fee
☐ Advanced Order - # of Copies (Minimum of 10)
☒ Any Deficiencies in Enclosed Fees (Minimum of 10)

6b. The following fees should be changed to:
 BEPUNIT ACCOUNT NUMBER 06-1300
 (ENCLOSED PART C) A-54681-1/JAS

The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified above.

Signature of party in interest of record: James A. Sheridan (Date) 03-28-94

NOTE: This Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

TRANSMIT THIS FORM WITH FEE-CERTIFICATE OF MAILING ON REVERSE



1

#12
#5

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:) Art Unit: 2607
DANIEL B. D'SOUZA) Examiner: W. Burns
Serial No. 07/956,453)
Filed: October 2, 1992)
For: ACTIVE PROBE CARD) San Francisco, CA 94111
Date: April 26, 1993

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, DC 20231 on March 28, 1994

Signed: Denise R. Caldwell

TRANSMITTAL OF ISSUE FEE AND FORMAL DRAWINGS

Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

Enclosed herewith are eleven sheets of formal, corrected drawings in accordance with the Notice of Allowance mailed December 28, 1993. Also enclosed is the Issue Fee Transmittal and check for \$1170.

The Commissioner is authorized to charge any additional fees to Deposit Account No. 06-1300 (order A-54681-1/JAS).

Respectfully submitted,

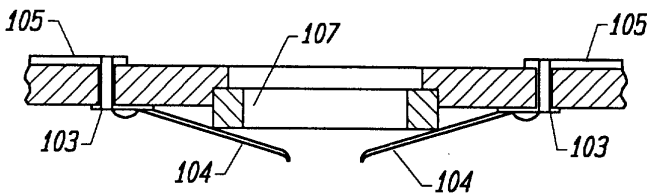
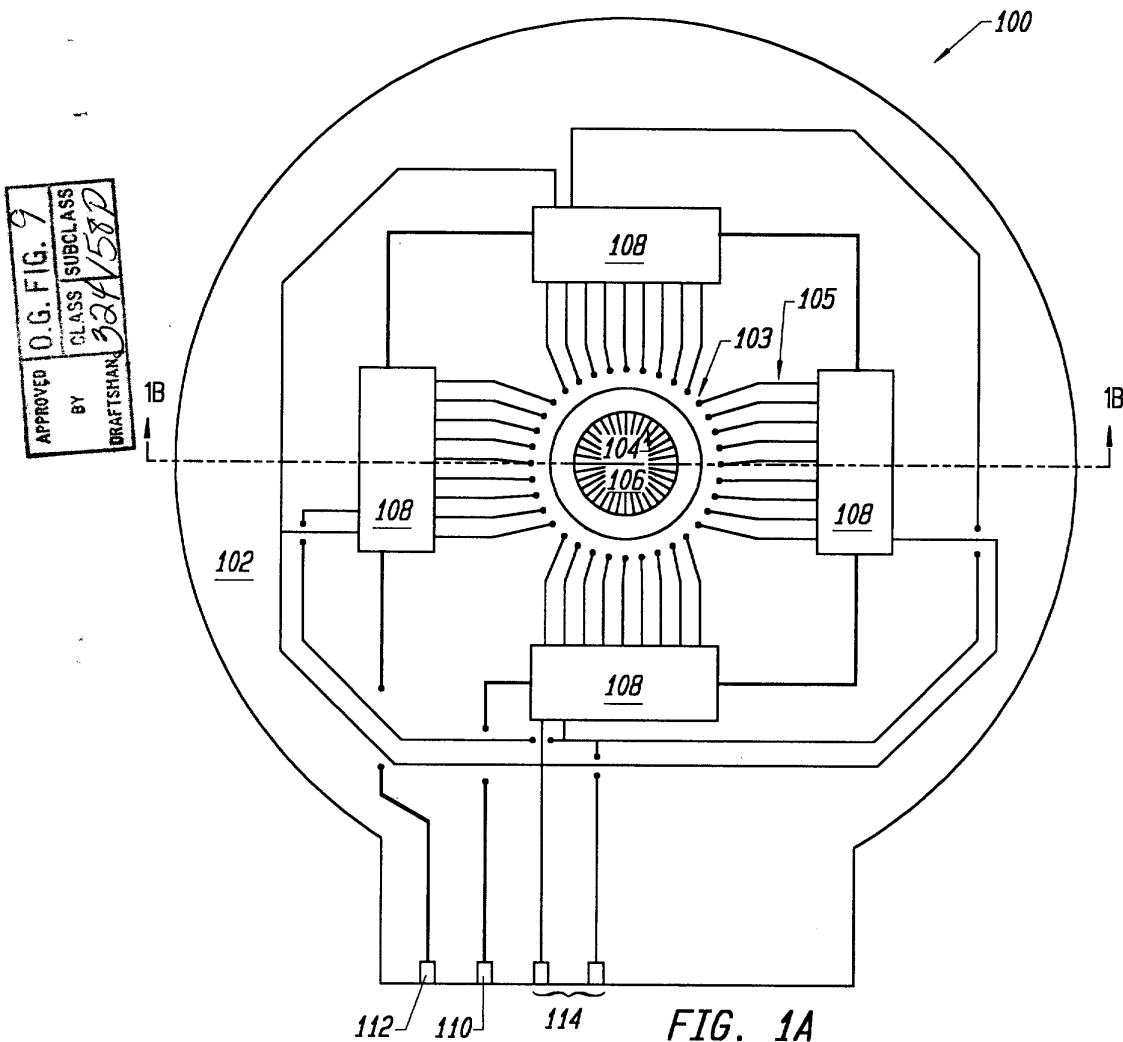
FLEHR, HOHBACH, TEST,
ALBRITTON & HERBERT

By James A. Sheridan
James A. Sheridan
Reg. No. 25,435

FLEHR, HOHBACH, TEST, ALBRITTON & HERBERT
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S.N. 07/956,453
A-54681-1/JAS

5323107



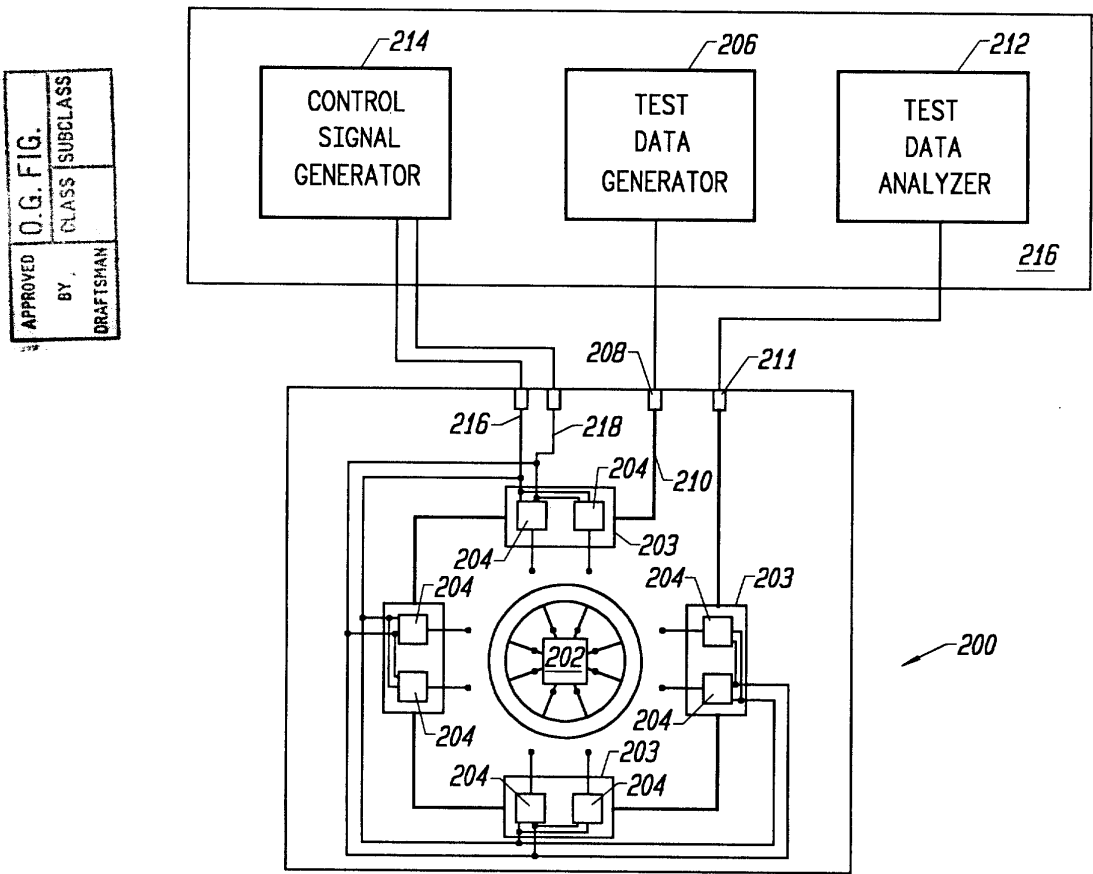


FIG. 2

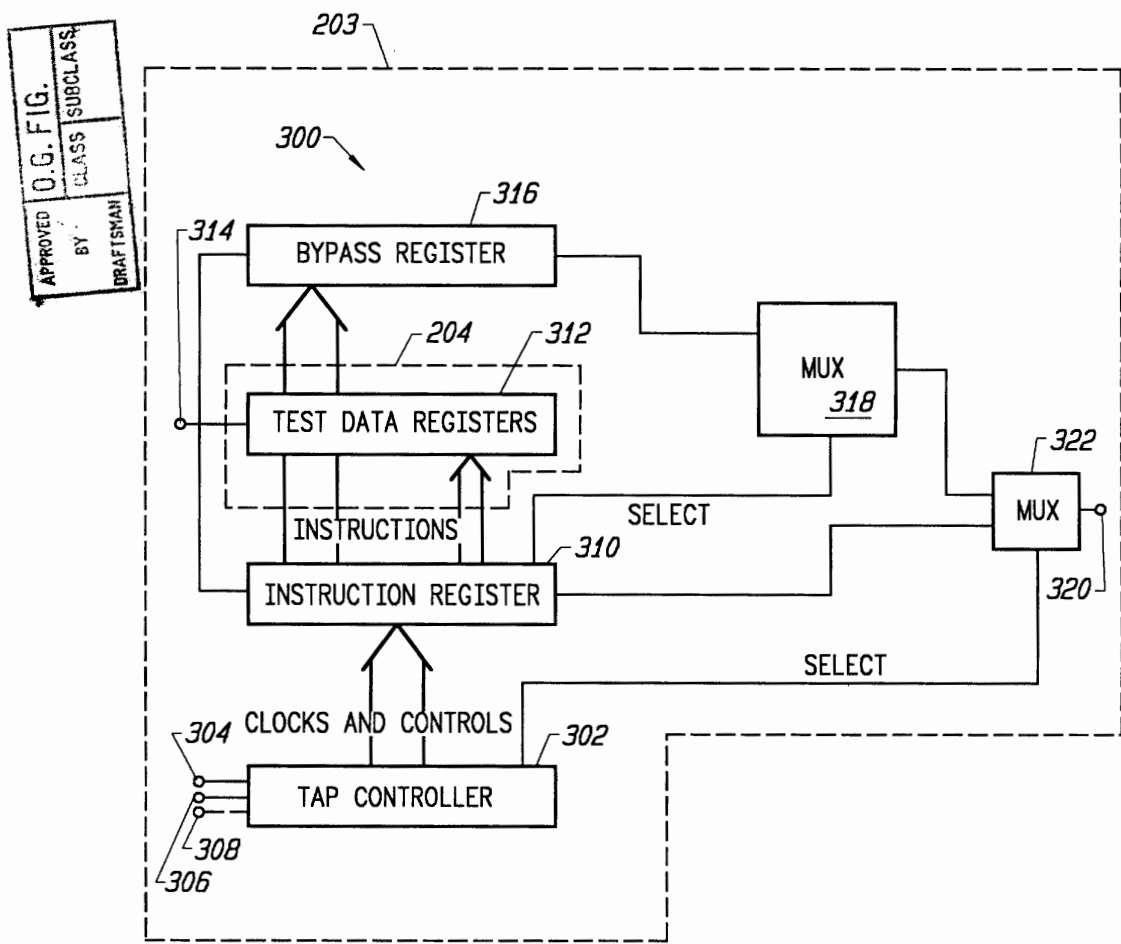


FIG. 3

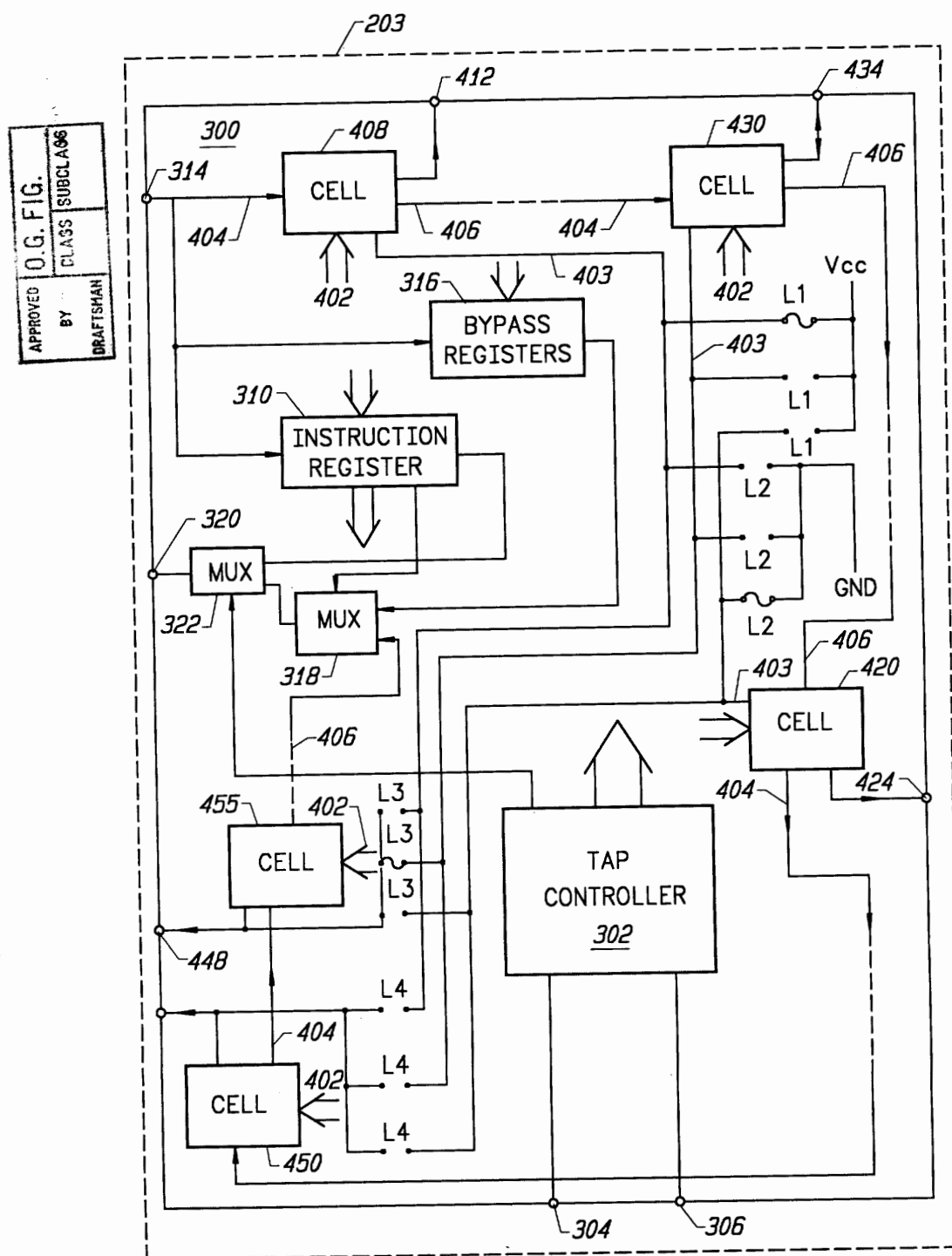


FIG. 4

